Claims

What is claimed is:

1. A method of automation performed on a semiconductor manufacturing tool, comprising the acts of:

(a) automatically running a set of designed experiments on the tool;

(b) collecting data resulting from running the experiments;

(c) creating a model based on the collected data; and

(d) using the model to control the tool.

2. The method of claim 1, wherein act (b) is performed automatically.

3. The method of claim 1, wherein act (c) is performed automatically.

4. The method of claim 1, further including:

automatically creating the set of designed experiments for the tool.

5. The method of claim 1, further including:

importing one or more designed experiments from an external system.

6. The method of claim 1, further including at least one of:

importing data collected by running at least one experiment on an external system; and

importing data collected during at least one previously run experiment.

7. The method of claim 6, further including:

automatically creating a model based on the imported data and user input.

8. The method of claim 6, further including:

automatically creating a model based on the collected data, the imported data and user input.

9. The method of claim 1, further including:

allowing a user to interactively select one or more parameters to be adjusted between the experiments of the designed set of experiments and select one or more set of data to be collected.

10. The method of claim 1, further including:

automatically generating the design set of experiments based on the user selected parameters and set of data to be collected.

11. The method of claim 1, further including:

collecting the data based on a wafer-by-wafer basis.

12. A method of automation performed on a tool to manufacture devices, comprising the acts of:

(a) automatically creating a set of designed experiments;

(b) automatically running the set of designed experiments on the tool;

(c) automatically collecting data resulting from running the experiments, wherein the data are collected on a wafer-by-wafer basis;

(d) automatically creating a model based on the collected data; and

(e) using the model to control the tool.

13. A method of automation performed on a tool to manufacture devices, comprising the acts of:

(a) automatically running a set of designed experiments on the tool;

(b) automatically collecting data resulting from running the experiments;

(c) creating a model based on the collected data and imported data; and

(d) using the model to control the tool.

14. The method of claim 13, wherein the imported data are from an external system.

15. The method of claim 14, wherein the imported data are from previously run experiments.

16. A system of automating a semiconductor manufacturing tool, comprising:

(a) a DOE system configured to automatically create a designed set of experiments for the tool;

(b) a controller configured to automatically run the created set of experiments on the tool and collect data resulting from running the experiments; and

(c) a modeling environment configured to create a model based on the collected data, wherein the controller is further configured to control the tool based on the created model, and wherein the DOE system, controller and modeling environment are integrated with each other.

17. The system of claim 16,wherein the DOE system is further configured to create automatically the set of designed experiments for the tool.

18. The system of claim 16, wherein the DOE system is further configured to import one or more designed experiments from an external system.

19. The system of claim 16, wherein the DOE system is further configured to import at least one of data collected by running at least one experiment on an external system and data collected during at least one previously run experiment.

20. The system of claim 19, wherein the DOE system is further configured to create a model based on the imported data and user input.

21. The system of claim19, wherein the DOE system is further configured to create a model based on the collected data, the imported data, and user input.

22. The system of claim 16, wherein the DOE system is further configured to allow a user to interactively select one or more parameters to be adjusted between the experiments of the designed set of experiments and select one or more set of data to be collected.

23. The system of claim 16, wherein the DOE system is furthered configured to generate automatically the design set of experiments based on the user selected parameters and set of data to be collected.

24. The system of claim 16, wherein the controller is further configured to collect the data based on a wafer-by-wafer basis.

25. A computer readable medium for storing instructions being executed by one or more computers, the instructions directing the one or more computers for automatically generating design of experiment (DOE), the instructions comprising implementation of the acts of:

(a) automatically running a set of designed experiments on the tool;

(b) automatically collecting data resulting from running the experiments;

(c) creating a model based on the collected data; and

(d) using the model to control the tool.

26. The medium of claim 25, further including the instructions for implementing the act of:

automatically creating the set of designed experiments for the tool.

27. The medium of claim 25, further including the instructions for implementing the act of:

importing one or more designed experiments from an external system.

28. The medium of claim 25, further including the instructions for implementing at least one act of:

importing data collected by running at least one experiment on an external system; and

importing data collected during at least one previously run experiment.

29. The medium of claim28, further comprising the instructions for implementing the act of:

automatically creating a model based on the imported data and user input.

30. The medium of claim 28, further including the instructions for implementing the act of:

automatically creating a model based on user input, the collected data and the imported data.

31. The medium of claim 25, further including the instructions for implementing the act of:

allowing a user to interactively select one or more parameters to be adjusted between the experiments of the designed set of experiments and select one or more set of data to be collected.

32. The medium of claim 25, further including the instructions for implementing the act of:

automatically generating the design set of experiments based on the user selected parameters and set of data to be collected.

33. The medium of claim 25, further including the instructions for implementing the act of:

collecting the data based on a wafer-by-wafer basis.